Capabilities of the Test and Evaluation Workforce of the Department of Defense

Report to Congress

Department of Defense

Introduction

A. BACKGROUND

This report responds to section 234 of the Bob Stump National Defense Authorization Act for Fiscal Year 2003 (FY03) (Pub.L.No.107-314) (NDAA), which requires the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) to submit a report to Congress on the capabilities of the test and evaluation (T&E) workforce by March 15, 2003. This report was prepared by USD AT&L in consultation with the Under Secretary of Defense for Personnel and Readiness (USD(P&R)) and the Director, Operational Test & Evaluation (DOT&E).

To address the capabilities of the T&E workforce and meet the requirements of section 234, this report focuses on the following:

- Assessments of changing size and demographics, including anticipated retirements through FY07 and FY12, and future workloads and responsibilities.
- Actions to ensure the T&E workforce is of sufficient size and appropriate composition, and that the workforce has the expertise needed to accurately gauge the suitability and effectiveness of systems through timely testing.
- Considerations for using the DoD Civilian Acquisition Workforce Personnel Demonstration Project (AcqDemo) [1] and other special personnel management authorities to attract and retain qualified T&E personnel.
- Initiatives that facilitate recruitment and retention of the T&E workforce.
- Discussion of, and recommendations on, other relevant matters.

This report represents a best-effort response to provide the data requested within the specified response time. However, a comprehensive and substantive DoD-wide plan that includes 5- and 10-year projections of the number and qualifications of the military and civilian personnel necessary to carry out anticipated workloads could not be fully developed in the available time. Since the T&E workforce is critical to accomplishment of the test and evaluation, and acquisition missions, DoD will undertake a strategic planning effort to maintain this critical capability.

B. SCOPE

For the purpose of this report, the DoD T&E workforce consists of three components:

[1] 10 U.S. Code Sec. 1701 notes, Pub. L. 104-106., section 4308

- DoD military and civilian personnel located in the operational test agencies (OTAs).
- DoD military and civilian personnel at the Major Range and Test Facility Base (MRTFB) installations. The MRTFB installations are listed in Appendix A.
- Other T&E personnel—not in an OTA or an MRTFB installation—located primarily in headquarters organizations, defense agencies, or program offices.[2]

We will also discuss an important subset of the T&E workforce: those personnel occupying a Defense Acquisition Workforce Improvement Act (DAWIA) designated position. These positions encompass about one third of the DoD T&E workforce as defined in this report. DAWIA requires the Secretary of Defense, acting through the Under Secretary of Defense (Acquisition, Technology, and Logistics), to establish education, training and experience requirements for the civilian and military acquisition workforce. The requirements are based on the complexities of the job and are listed in DoD 5000.52-M, "Career Development Program for Acquisition Personnel."

C. Report Development

A team of representatives from AT&L, P&R, and DOT&E prepared this report using data provided by the DoD components. We augmented these data with data extracted from personnel records of active-duty military and government civilian personnel from the personnel databases provided by the Defense Manpower Data Center (DMDC). Data on occupation were placed in logical groupings for the purpose of this report.

D. Report Organization

The remainder of this report is organized as follows:

- Part One contains the analysis results. We detail current T&E workforce demographics, projected changes, and projected workload and requirements.
- Part Two is the T&E workforce capability action plan. We discuss current use of authorities and recommend actions to address T&E workforce needs.
- Part Three is a summary of the challenges facing the T&E workforce and how we plan to address them.

The report includes five statistical tables and nine figures (see list in Appendix B) containing data as of September 30, 2002.

[2] DoD plans to continually review and refine the T&E workforce personnel data in order to enable us to manage this critical asset better.

Part One. Analysis Results

A. T&E Workforce Demographics

1. Current Composition

As stated in the introduction, the DoD T&E workforce includes DoD military and civilian personnel, excluding base operating support personnel, located in OTAs and MRTFB installations, and any other DoD military and civilian personnel performing T&E functions.

Table 1 shows the composition of the T&E workforce by Component.

Table 1. DoD T&E Workforce by Component

Component	OTAs	MRTFB	Other	Total
Army				
Military	494	41	73	608
Civilian	853	2,926	848	4,627
Total	1,347	2,967	921	5,235
Navy/USMC				
Military	272	1,310	30	1,612
Civilian	97	1,915	1,801	3,813
Total	369	3,225	1,831	5,425
Air Force				
Military	539	3,404	298	4,241
Civilian	200	3,647	93	3,940
Total	739	7,051	391	8,181
Defense Agency				
Military	5	81	29	115
Civilian	16	144	44	204
Total	21	225	73	319
Total, All Components				
Military	1,310	4,836	430	6,576
Civilian	1,166	8,632	2,786	12,584
Total	2,476	13,468	3,216	19,160

The 19,160 T&E workforce personnel, located throughout DoD, perform either operational or developmental T&E work. The T&E workforce comprises 6,576 military personnel (34 percent) and 12,584 civilian (66 percent). The Army has 5,235 personnel (27 percent), the Navy/Marine Corps has 5,425 (28 percent), the Air Force has 8,181 (43 percent), and the defense agencies have 319 (2 percent).

The OTAs that employ the DoD T&E workforce are as follows:

- Army Test and Evaluation Command (ATEC)
- Navy Operational Test and Evaluation Force (OPTEVFOR)
- Marine Corps Operational Test and Evaluation Activity (MCOTEA)
- Air Force Operational Test and Evaluation Center (AFOTEC)
- Joint Interoperability Test Command (JITC)

The majority of the developmental tests and some operational tests are conducted at the MRTFB installations. These sites contain the major high-value test facilities within DoD and include significant air, land, and sea operating areas necessary to test modern weapons systems.

The T&E workforce in the OTAs and MRTFB installations consists of many different occupations. Table 2 displays the OTA T&E civilians by occupational categories, and Table 3 displays the MRTFB T&E civilians by occupational categories.

Table 2. OTA T&E Civilians by Occupational Categories

Occupational Category	Number	Percentage
Program Management, Program Analysis, and Logistics Management	464	39.8
Engineering and Maintenance Officers	148	12.7
Scientists and Professionals	253	21.7
Enlisted Level Occupations[a]	241	20.7
Other	60	5.1
Total	1,166	100.0

[a] This occupational category includes many personnel performing blue collar functions.

Table 3. MRTFB T&E Civilians by Occupational Category

Occupational Category	Number	Percentage
Program Management, Program Analysis, and Logistics Management	1,242	14.4
Engineering and Maintenance Officers	3,299	38.2
Scientists and Professionals	691	8.0
Wage Grade/Enlisted Level Occupations[a]	3,010	34.9
Other	390	4.5
Total	8,632	100.0

[a] This occupational category includes many personnel performing blue collar functions.

A total of 3,216 T&E workforce personnel are located outside the OTAs and MRTFB installations. Most of these personnel work at the headquarters level, at a defense agency, or in a program office. The distribution by Component is as follows: Navy, 57 percent; Army, 29 percent; Air Force, 12 percent; and defense agencies, 2 percent. Fifty-five percent of the workforce outside the OTAs and MRTFB installations are Defense Acquisition Workforce Improvement Act (DAWIA) personnel.

Many T&E workforce personnel are in various DAWIA career fields, such as information technology (584), test and evaluation (6,197), program management (1,099), and systems engineering (3,970). The DAWIA T&E career field personnel are displayed by Component in Table 4.

Table 4. Personnel in DAWIA T&E Career Field

Component	Military	Civilian	Totals
Army	128	2,171	2,299
Navy/Marine Corps	316	2,024	2,340
Air Force	590	916	1,506
Other	—	52	52
DoD	1,034	5,163	6,197

Many engineers (such as general, mechanical, electronics, and aerospace) and scientists (such as in general physical science, physics, and chemistry) are in the DAWIA portion of the T&E workforce. DoD T&E workforce personnel are in almost all the DAWIA career fields. Table 5 displays the civilians in the DAWIA T&E career field by occupation.

Table 5. DAWIA T&E Career Field Civilians by Occupation

Occupation (Series Code)	Number	Percentage
Electronics Engineering (855)	1,545	29.9
General Engineering (801)	880	17.0
Mechanical Engineering (830)	536	10.4
Aerospace Engineering (861)	389	7.5
Operations Research (1515)	361	7.0
Computer Science (1550)	181	3.5
Program Management (340)	145	2.8
Mathematics (1520)	134	2.6
Computer Engineering (854)	130	2.5
IT Specialist (2210)	91	1.8
Administration & Program (301)	78	1.5
Electronics Technician (856)	71	1.4
Electrical Engineering (850)	69	1.3
Civil Engineering (810)	66	1.3
General Physical Science (1302)	55	1.1
Chemistry (1320)	50	1.0
Physics (1310)	47	0.9
Other	335	6.5
Total	5,163	100.0

2. T&E Workforce Qualifications

Figure 1 displays the OTA and MRTFB T&E civilian workforce by education level. Forty-five percent of the OTA and MRTFB T&E civilians have a bachelor's degree or higher.

Figure 2 shows the DAWIA T&E career field portion of the T&E workforce by education level. It reflects DAWIA personnel in the OTAs and in MRTFB installations, and DAWIA T&E career field personnel located outside the OTAs and MRTFB installations. The stated purpose of DAWIA is to improve the effectiveness of the military and civilian acquisition workforce through enhanced education, training and career development, thereby improving the acquisition process. Ninety-two percent of the civilians in the DAWIA T&E career field have a bachelor's degree or higher. The professionalism of the workforce is evidenced by the fact that three quarters of these DAWIA T&E career field civilians are engineers or scientists. This is shown in Figure 3.

Figure 1. OTA & MRTFB T&E Civilians Profile by Education Level

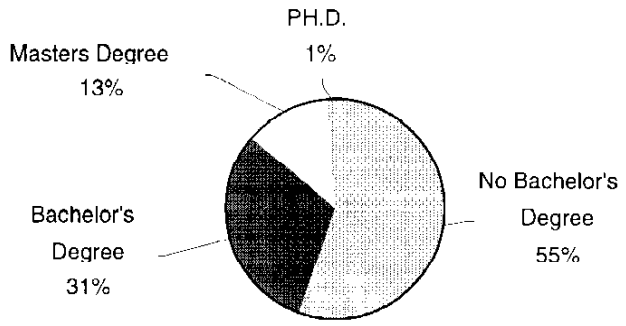


Figure 2. DAWIA T&E Career Field Civilians by Education Level

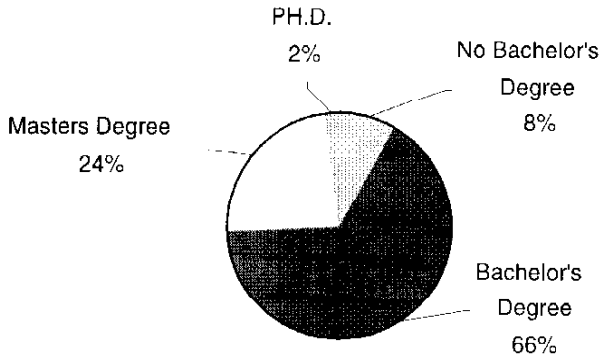
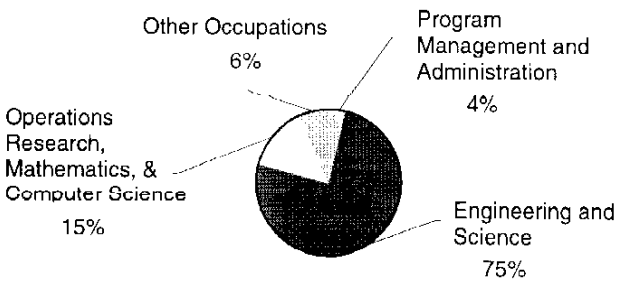


Figure 3. DAWIA T&E Career Field Civilians by Major Occupational Groups



B. PROJECTED CHANGES IN T&E WORKFORCE

1. Current Shortfall

Since FY90, the civilian portion of the T&E workforce located in OTAs and MRTFB installations has declined by approximately 35 percent and the military component has declined by about 49 percent[3]. These losses necessitated investments in better training of our T&E workforce, streamlining our T&E business processes, and modernizing our test procedures and technologies (such as modeling and simulation). These investments have played a pivotal role in our continued ability to accomplish the T&E mission with a shrinking workforce. Another factor has been the somewhat slower rate of decline in the contractor component of the workforce. At the OTAs, for example, contractors accounted for about one-quarter of the workforce in FY90 and now make up one-third. Nevertheless, the total T&E workforce is about 29 percent smaller than it was in FY90.

These reductions are adversely affecting weapons systems testing. Recent reports, including the *Report of the Defense Science Board Task Force on T&E Capabilities* and the *DOT&E FY02 Annual Report*, emphasize this fact. The insufficient number of personnel at test sites limits the flexibility of facility managers and reduces the capacity of facilities to meet the needs of their customers. Additional personnel would make it possible to improve the design of tests and increase the tempo of testing. Specifically, this should include testers in program offices to support program managers, define test strategies, plan test programs, and monitor contractor tests. Surge testing also requires more personnel. Management and procedural savings have limitations; we must work to ensure that our quest for streamlining does not result in a less capable workforce deciding the fate of the next generation of weapons systems. Some priority personnel needs[4] include the following:

- *Technical personnel to research and develop future T&E capabilities.* The technology used to test a system must keep pace with the technologies used in the system.
- *Expert engineers to ensure an adequate reliability component for every test event.*
- *Software professionals to evaluate software architecture and designs early in the development process.*
- *Military personnel to provide direct user input.* The Army's soldier-operator-maintainer-tester-evaluator (SOMTE) troops are urgently needed back in the infrastructure so that systems can benefit from direct warfighter input during developmental testing. The participation of Army users has diminished as the

[3] These are estimates based on data on the MRTFB workforce contained in the DOT&E FY01 Annual Report, and data on the OTA workforce appearing in the DOT&E FY02 Annual Report.

[4] DOT&E FY02 Annual Report.

emphasis on providing earlier feedback to the development process has increased.

- *Technical expertise in specific areas.* These include flight safety systems, chemical and biological research, and mathematical and statistical analysis.

2. Demographics and Trends Affecting Workforce Size

As the size of the T&E workforce has steadily declined, the average age and years of experience of the workforce have increased, possibly because downsizing has resulted in a more senior cadre of government personnel. Figure 4 displays this downward trend in the OTA workforce from FY93 to FY02. Figure 5 shows a similar decline for personnel in MRTFB installations.

Figure 4. OTA T&E Workforce Profile by Fiscal Year

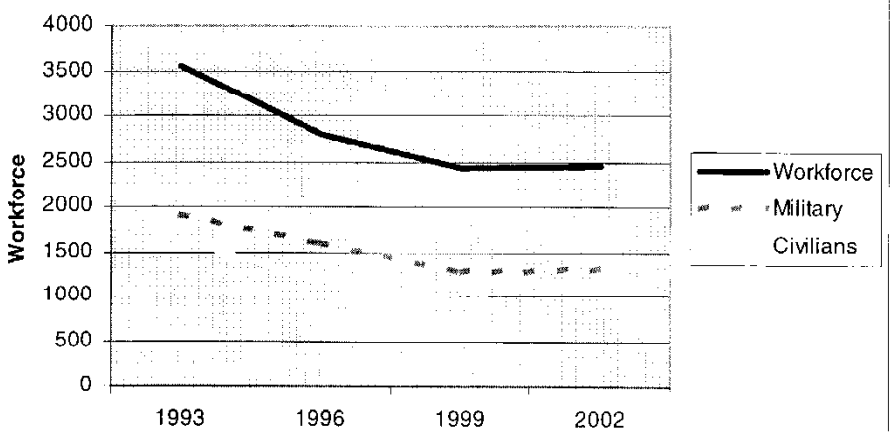
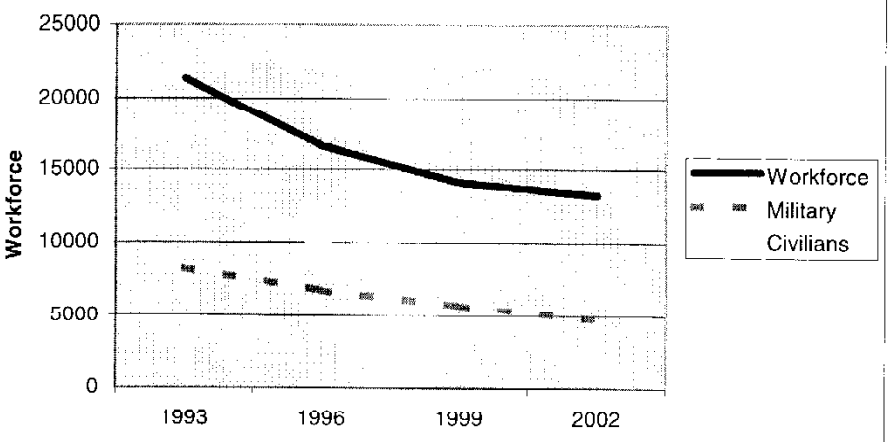


Figure 5. MRTFB T&E Workforce Profile by Fiscal Year



The data in Figures 6 and 7 clearly illustrate an aging T&E civilian workforce. The age profile for the current T&E civilian workforce located in OTAs and MRTFB installations is shown in Figure 6. Figure 7 shows that the MRTFB science and engineering workforce is significantly older than the national science and engineering workforce.

Figure 6. OTA & MRTFB T&E Civilians Profile by Age

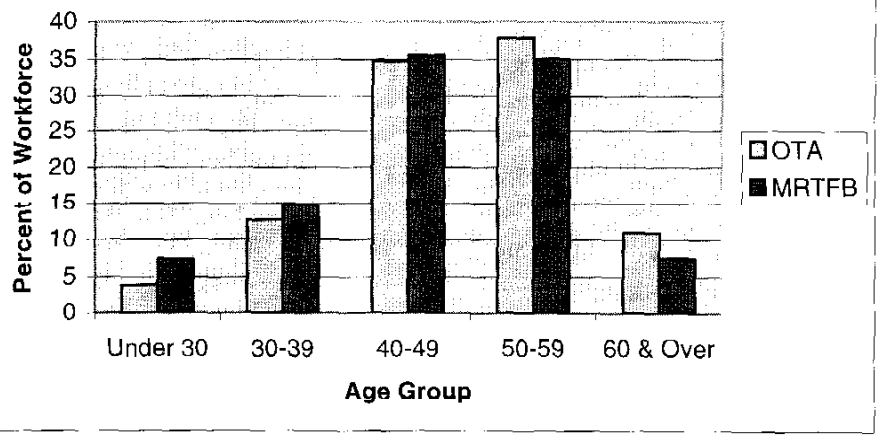
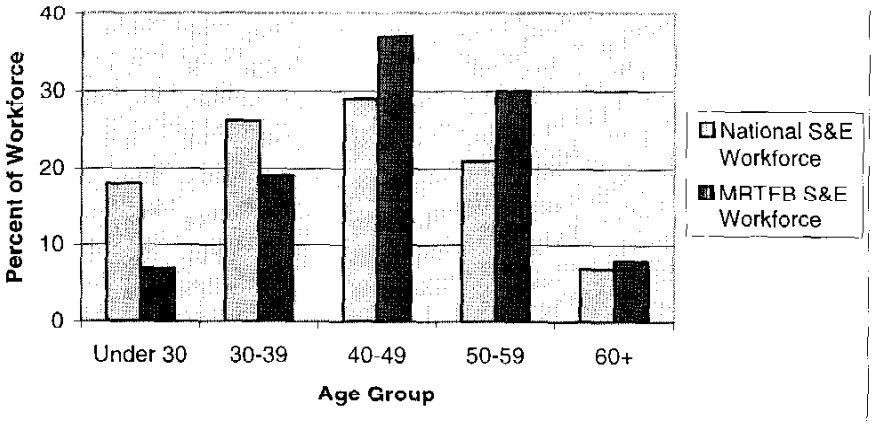


Figure 7. MRTFB Science & Engineering Workforce by Age Compared to National S&E Workforce



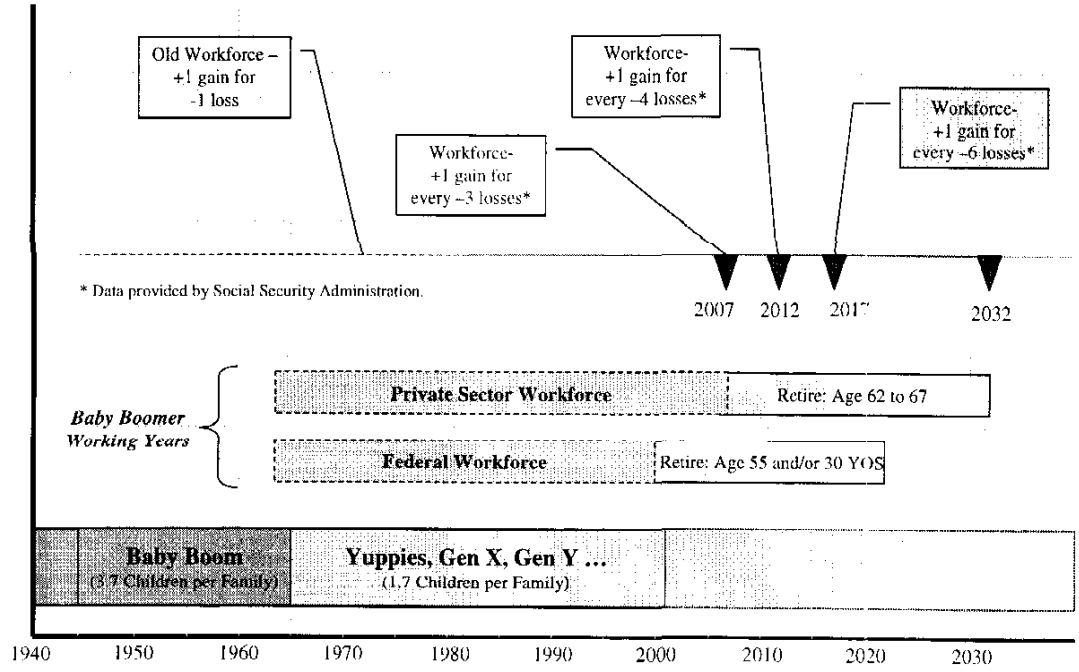
Source: Data on the national science and engineering workforce are from the DOT&E FY02 Annual Report.

Demographic trends in the labor force are another factor that will affect the size and shape of the future T&E workforce. The number of Generation Xers and Generation Yers in the labor force will fall significantly short of the number needed to replace

Baby Boomers who will retire during the next decade[5]. As depicted in Figure 8, only 1 of every 3 retiring workers will be replaced by a younger worker by 2007. By 2012, this will drop to only 1 of every 4 workers being replaced. One sign of this trend is the projected 6 percent decline in the number of workers in the prime age range of 25 to 45 by 2007.

Projected T&E workloads, discussed later in this report, are forecast to increase. Increased workload is likely to increase demand for qualified people to conduct the necessary testing these systems require. At the same time, the retirement of substantial numbers of current employees has the potential to shrink the workforce unless an aggressive recruitment effort is launched.

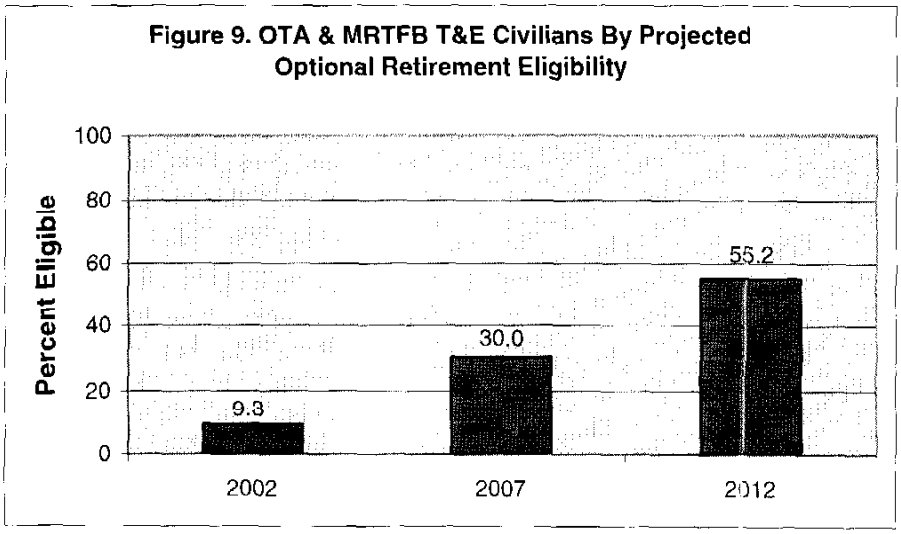
Figure 8. Demographic Impacts on Workforce Supply



Source: USD(AT&L) based on data from the Social Security Administration

Figure 9 shows optional retirement eligibility data for the T&E civilian workforce for FY02, FY07, and FY12. Employees covered by the Civil Service Retirement System (CSRS) are eligible to retire when they meet one of the following criteria: age 55 with 30 years of service, age 62 with 20 years of service, or age 65 with 5 years of service. The Federal Employees Retirement System (FERS) criteria are essentially the same except for the age 55 category. For anyone born before 1948, the retirement age is 55, as with CSRS. The minimum retirement age increases gradually to age 56 for those born before 1965, and increases to 57 for those born in 1970 or later.

[5] Baby Boomers are persons born during the period from 1946 to 1964. Generation X refers to persons born between 1965 and 1979, and Generation Y includes the years 1980 to 1999.



The optional retirement eligibility projections in Figure 9 show the percentage of the current OTA and MRTFB T&E civilian workforce that will be eligible for optional retirement. This will grow from about nine percent at present to 30 percent in FY07.

C. Projected Workforce Requirements

1. Projected Workload

Quantifying future workloads is difficult, but clearly the T&E community is likely to face an increase in demand over the next 10 years. Simultaneous implementation of three generations of technology will drive future workload increases for the T&E workforce:

- Improvements to existing systems must continue to be made as long as our warfighters depend on them. For example, the Navy's aging fleet of combat aircraft requires system and platform upgrades that contribute to the T&E workload.

- Transformational applications guide the development of the current generation of systems. The Army's Objective Force is an unprecedented acquisition endeavor in both scope and scale. Conducting the T&E program will consume most—if not all—the T&E resources available to the Army.

- The development and testing of the next generation of technology applications will significantly increase workload levels.

The workload of the OTAs has nearly doubled in the last 10 years due in part to an expansion in the scope of their mission. This trend suggests significant increases

over the next decade. The increasing size and complexity of the workload at OTAs has been traced to three factors[6]:

- Adoption of the evolutionary acquisition process, resulting in earlier involvement of operational testers in system development, and shorter development cycles with more continuous developmental and operational testing.
- Increased introduction of advanced technologies, making the T&E process more complex.
- Need to test systems in more complex operational environments, including the testing of a system of systems (Network Centric Warfare).

We expect these factors to affect the workload of the entire T&E workforce over the next decade. Each is discussed in detail below.

2. Factors Shaping Future Workload

Evolutionary Acquisition Process

The test and evaluation portion of the acquisition life-cycle has been traditionally based on a single step to full capability. Using that approach, programs undergo iterative development and development testing during the full-scale engineering development or engineering and manufacturing development phase; then they are "handed-off" for operational testing when the program enters low-rate initial production. The result of this traditional approach is a sequential testing environment where the outcomes of the tests are fed back to the developer, changes are made, and the system retested.

Evolutionary acquisition is a process that allows the Department to reduce cycle time and speed the delivery of advanced capabilities to our warfighter. The process is designed to develop and field demonstrated technologies for both hardware and software in manageable pieces which may be less than the full requirement as a tradeoff for earlier delivery, agility, affordability, and risk reduction. While the benefits of evolutionary acquisition to the user are enormous, compared to the traditional single step to full production, test and evaluation becomes much more complex. Development and production is not sequential but cyclical, i.e., a program can have increment one in production while increment two is in engineering development and increment three is in technology development. The result is that a program is undergoing the testing of multiple increments at the same time. Outcomes from the multiple tests are fed back to the various development efforts. So, testers are involved in many more test events, with many more outcomes, feeding many more development efforts, all of which leads to an increasingly complex test and evaluation regime.

[6] DOT&E FY01 Annual Report

SKILLS REQUIRED BY NEW TECHNOLOGIES

The rapid advance of technology is a subject of concern for another reason—it requires a workforce that possesses the latest knowledge and skills. Only 17 percent of the OTA workforce is less than 40 years old, while the average age of the MRTFB workforce has increased from 43.5 to 48 in the past 10 years. These demographics point to the challenge we face in keeping the skills of the current T&E workforce up to date while striving to shape a somewhat younger workforce through the hiring process.

As noted previously, the complexity of new weapons systems and the environments in which they will be expected to operate mean that the rigor and sophistication of the T&E process must keep pace. The skill sets required to design and analyze developmental tests of the next generation of weapons may not even reside within the present generation of workers, meaning that legacy skills may not suffice to meet future demands. The rapid infusion of breakthrough technologies into new as well as existing combat systems will be widespread. DoD must first identify the skills necessary for the future, and then retrain the current workforce and/or recruit personnel who have the skills. Advances in the following technologies will determine the skills needed in the T&E workforce:

- Command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR)
- Broadband technologies
- Telemetry
- Microminiaturization
- Network centric warfare
- Embedded instrumentation
- Embedded training
- Sensor fusion
- Imaging
- Digital modeling and simulation
- Directed energy
- Composite materials
- Prognostics and diagnostics
- Robotics.

More Complex Operational Environment

The DoD emphasis on expanding and improving joint warfare capabilities has increased significantly in recent years. Therefore, DoD acquisition and weapons systems requirements policies have been recently revised to place joint requirements and joint capabilities at the center of weapon systems development. This heightened emphasis on joint capabilities will result in an increased requirement to test and evaluate systems interoperability, a system of systems, and operations in a joint environment. These new joint test requirements will be in addition to the more traditional platform-level T&E, which will still be needed, thus increasing overall T&E workload.

3. Additional Workforce Requirements

In addition to the new skills required by technological advances, knowledge and skills in safety, and environmental protection and remediation, will continue to be important over the next 10 years. DoD must ensure the safe development, testing, and use of modern military weapons systems. The effects on the natural environment must be mitigated in balance with operational necessity.

Members of the T&E workforce must have a broader understanding of their mission, including the roles of personnel who work outside their own unit or area of expertise. Design engineers, testers, technicians, program managers, and acquisition specialists will need to work together on tailoring T&E products to facilitate the integration of test results into acquisition decision making.

The Army—while acknowledging the need for skills to design, develop, and operate the models, simulations, and test instrumentation of the future—has also pointed to the need for more acquisition specialists within the T&E workforce. Life-cycle support and the costs of sustainment are critical in a resource-constrained environment. The T&E workforce will require knowledge of the business practices and principles used in the private sector to enable them to manage more effectively

DAWIA was enacted to improve the acquisition process. The senior acquisition executives and other leaders in the acquisition community need to ensure that the competencies possessed by the acquisition workforce keep abreast of the needs of weapon designers and developers. Better training for the acquisition workforce will help testers be more effective in planning test programs and monitoring contractor testing.

Part Two. T&E Workforce Capability Action Plan

A. USE OF AUTHORITIES

During the past 3 years, DoD has aggressively used authorities enacted by Congress to experiment with and develop new approaches to workforce management. These approaches have succeeded and will provide the basis for strategies that DoD will continue to use to meet future T&E workforce needs. The most far-reaching of these authorities is the Civilian Acquisition Workforce Personnel Demonstration Project (AcqDemo), implemented on the basis of legislation passed in 1996 and modified in 1998. The purpose of AcqDemo is to identify and use best practices that meet the needs of the DoD acquisition workforce and that could be included in a future DoD civilian personnel management system.

The AcqDemo—which began in January 1999 with 4,701 participants—has grown to over 6,000 participants. Approximately 7,000 more employees will enter the program this year from the Missile Defense Agency, US Army Developmental Test Command located at Aberdeen Proving Ground, MD, and portions of the US Army Operational Test Command, Fort Hood, TX.

Participation will then total approximately 13,000, almost a threefold increase since the program's inception. The AcqDemo has produced the following key outcomes:[7]

- Simplified, accelerated hiring techniques have cut hiring times by more than 50 percent, reduced administrative workloads, and increased the pool of applicants from which managers make selections.
- A new contribution-based compensation and appraisal system (CCAS) has led to increased retention of high contributors and increased turnover of low contributors.
- Improved training and communication strategies help ensure successful implementation of changes in personnel systems and practices.

The success of the AcqDemo has helped create momentum toward improving personnel management practices at DoD. Last year, the USD(P&R) chartered a Best Practices Task Force to identify the most promising human resource management practices from demonstration projects and alternative personnel systems in DoD and elsewhere. The task force has made considerable progress to date in compiling and refining best practices for hiring, staffing, evaluating, and compensating employees.

[7] Department of Defense report to Congress, "Plan for Improving the Personnel Management Policies and Procedures Applicable to the Department of Defense Civilian Acquisition, Technology and Logistics Workforce Based on the Results of the DoD Civilian Acquisition Workforce Personnel Demonstration Project" February 2003.

B. ACTIONS TO ADDRESS T&E WORKFORCE NEEDS

1. Attract and Retain Workforce

RECRUITMENT

Downsizing over the last 10 years has adversely affected the traditional relationships between the T&E community and universities and research institutions. Graduates entering the workforce have little or no understanding of the leading-edge nature of the work performed by DoD. According to a recent national public opinion poll commissioned by the Partnership for Public Service, only one in six college-educated Americans is interested in working for the federal government, making it extremely difficult to recruit and hire sufficient numbers of qualified graduates.

The Department is facing the challenge of recruiting a more technical workforce at a time when colleges and universities are producing fewer suitable candidates. According to the National Science Board, 40 percent of graduate students in engineering, mathematics, and computer science programs are foreign nationals. These graduates would have to become U.S. citizens before they could qualify for a job with the federal government.

The Office of Personnel Management recently reported that actual federal retirements were much less than predicted. Retirements in FY01 were 23 percent less than projected and 20 percent less in FY02. Reasons for this decrease range from an increased sense of mission after September 11 to the decline of the stock market, which devalued retirement accounts. Regardless of the reason, we must proactively shape our workforce to our changing requirements. The Department will continue to make appropriate use of voluntary early retirement authority (VERA) and voluntary separation incentive program (VSIP) as tools to manage workforce skills gaps.

In light of these factors, successfully recruiting the workforce of the future mandates a more aggressive approach. We are taking the following actions:

- Rebuilding relationships with colleges and university career services that atrophied during the downsizing of the 1990s.
- Attracting college students earlier by offering meaningful work experiences for summer employment and by reenergizing co op and intern programs.
- Using the Marketing and Recruiting Pilot Program at Edwards Air Force Base, which employs web-based "push" technologies to recruit targeted students for hard-to-fill occupations. Results from this program will lead to other proactive recruiting initiatives.

Although the salaries we can offer still lag behind the private sector, the T&E community has taken advantage of hiring flexibilities—such as pay banding, recruitment and relocation bonuses, and student loan repayment programs—to

enable the Department to compete in its T&E recruiting efforts. The major challenge we continue to face is our inability to make timely offers to prospective candidates. The AcqDemo incorporates simplified, accelerated hiring techniques that have reduced hiring times and administrative workloads. We are incorporating lessons learned from the AcqDemo in our best practices initiative. The best practices initiative includes greater hiring flexibilities such as expanded Scholastic Achievement Appointment and On-the-Spot Hiring authority.

RETENTION

The Department's retention strategy rests on three pillars:

- Offer exciting and challenging work that is critically important to the defense of our country.
- Provide a competitive salary and compensation package.
- Recognize and reward individuals for their contributions.

A key to retention is to start employees as quickly as possible doing the exciting work they were hired to perform. We must work to streamline the process of obtaining security clearances so that employees are not delayed as much as six months before assuming the duties for which they were hired.

The AcqDemo's CCAS has led to increased retention of high contributors and increased turnover of low contributors. The Department hopes to leverage lessons learned from the AcqDemo, the Navy's China Lake project, and other demonstration and alternative personnel systems into an improved system of management that will energize performance by providing greater rewards for employees and more responsibility for managers in making performance decisions. An improved personnel management system—combined with opportunities for advanced education, pay for professional certification and licenses, career broadening, rotation with industry assignments, and new continuous training initiatives—promises to improve retention of our high performers.

TRAINING AND DEVELOPMENT

A large percentage of T&E positions are coded as DAWIA positions. This means that personnel occupying these positions are required to meet stringent standards for education, training, and experience. The Defense Acquisition University (DAU) is DoD's corporate university for acquisition, technology, and logistics. DAU provides mandatory, assignment-specific, and continuing education courses for military and civilian personnel serving in 13 acquisition career fields. Once employees are qualified for a position, they must retain their qualification by completing 80 continuous learning points every 2 years. Points can be earned by attending classes, participating in workshops, successfully completing a professional license or certificate, or other activities deemed critical to remaining proficient in the position. DAU has developed continuous learning modules for enhancing job skills and has

leveraged web technologies to provide access 24 hours a day, 7 days a week. The Services also offer opportunities for advanced education through various programs designed to improve the technical and managerial skills of their workforce.

COMPENSATION AND INCENTIVES

Both the AcqDemo and the Navy China Lake demonstration project offer compensation programs designed to reward high performing employees. The Department's proposed best practices initiative seeks to energize performance by providing greater rewards for employees utilizing proven interventions from these demonstration projects as well as others throughout the government. We will continue to motivate and reward our employees with performance and time off awards as well as generous training and career development opportunities.

2. Set Management Policy and Processes

Multiple management initiatives have impacted the T&E workforce: returning uniformed personnel to field assignments, downsizing the civilian workforce, and outsourcing non-core functions and operations. We are continuing to evaluate the impact of these initiatives as part of our strategic planning process, and will make appropriate adjustments to ensure we can continue to accomplish our T&E mission.

We must also find ways to make assignments to T&E positions attractive and "career enhancing" to mid-grade officers in all fields. This will require the support of military promotion board members in valuing T&E assignments on par with those in tactical units and program management offices.

3. Planned Actions

The T&E workforce is critical to accomplishment of the test and evaluation, and acquisition, missions. The Department has already taken significant actions to maintain this essential workforce. In accordance with the President's Management Agenda, a key element of budget and performance integration is the workforce planning done as part of strategic management of human capital. As part of this initiative, the Department will undertake a strategic planning effort to maintain this critical capability. Specifically, the plan will address and emphasize the following considerations:

- Future size and composition.
- Staffing strategy for retaining critical in-house civilian and military T&E skills.
- Recruitment strategy to emphasize a coordinated approach.
- Training necessary to sustain a multi-skilled workforce.

- Appropriate mix of military personnel throughout every level of the T&E process.
- Impact of outsourcing on the in-house workforce.

4. Recommended legislation and authorities

Any recommended legislation will be submitted in accordance with the established practice after clearance with the Office of Management and Budget.

Part Three. Summary

A. THE NATURE OF THE PROBLEM

Since FY90, the civilian T&E workforce located in OTAs and MRTFB installations has declined by 35 percent, and the military component has declined by 49 percent. These losses necessitated investments in better training of our T&E workforce, streamlining our T&E business processes, and modernizing our test procedures and technologies. These investments have played a pivotal role in our continued ability to accomplish the T&E mission with a shrinking workforce. Another factor has been the somewhat slower rate of decline in the contractor component of the workforce. Nevertheless, the total reduction in the T&E workforce is about 29 percent since FY90.

The T&E workload has grown steadily during the past 10 years and will continue to increase over the next 10 years. This is due to adoption of the evolutionary acquisition process, increased use of advanced technologies, and the need to test systems in more complex operational environments.

Demographic trends will make it increasingly difficult to attract and keep sufficient numbers of qualified personnel needed to handle this workload. Thirty percent of the civilian T&E workforce will be eligible for optional retirement by FY07. If only one-quarter of those eligible actually retire, the civilian workforce will lose about 900 senior, experienced personnel by FY07. A demographic analysis done by the Social Security Administration estimates that only one younger worker will be available to replace every three to four older workers who leave during the next 10 years. The younger workforce will also be more mobile and seek a number of careers throughout their lifetime, necessitating a more proactive and responsive personnel system.

B. ACTIONS PLANNED TO ADDRESS THE PROBLEM

The T&E workforce is critical to accomplishment of the test and evaluation, and acquisition, missions. The Department has already taken significant actions to maintain this essential workforce. In accordance with the President's Management Agenda, a key element of budget and performance integration is the workforce planning done as part of strategic management of human capital. As part of this initiative, the Department will undertake a strategic planning effort to maintain this critical capability. Specifically, the plan will address and emphasize the following considerations:

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- Impact of outsourcing on the in-house workforce.

Appendix A. MRTFB Installations

ARMY ACTIVITIES

White Sands Missile Range, including Electronic Proving Ground, Ft Huachuca, AZ

High Energy Laser Systems Test Facility

Reagan Test Site, U.S. Army Kwajalein Atoll

Yuma Proving Ground

Dugway Proving Ground

Aberdeen Test Center

NAVY ACTIVITIES

Naval Air Warfare Center-Weapons Division, Point Mugu

Naval Air Warfare Center-Weapons Division, China Lake

Naval Air Warfare Center-Aircraft Division, Patuxent River

Atlantic Undersea Test and Evaluation Center

Pacific Missile Range Facility

AIR FORCE ACTIVITIES

45th Space Wing

30th Space Wing

Arnold Engineering Development Center

Nevada Test and Training Range (NTTR)

Air Force Flight Test Center

Utah Test and Training Range

Air Armament Center (AAC) 46th Test Wing and 46th Test Group

DEFENSE INFORMATION SYSTEMS AGENCY ACTIVITY

Joint Interoperability Test Command

Appendix B. List of Tables and Figures

TABLES

FIGURES